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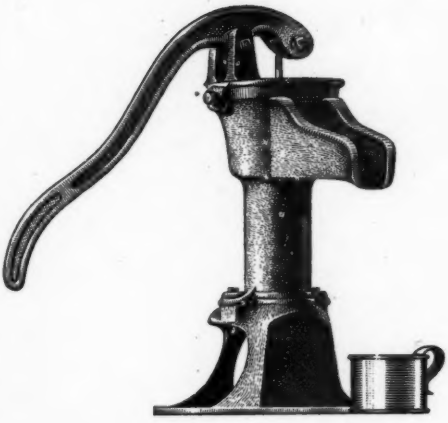

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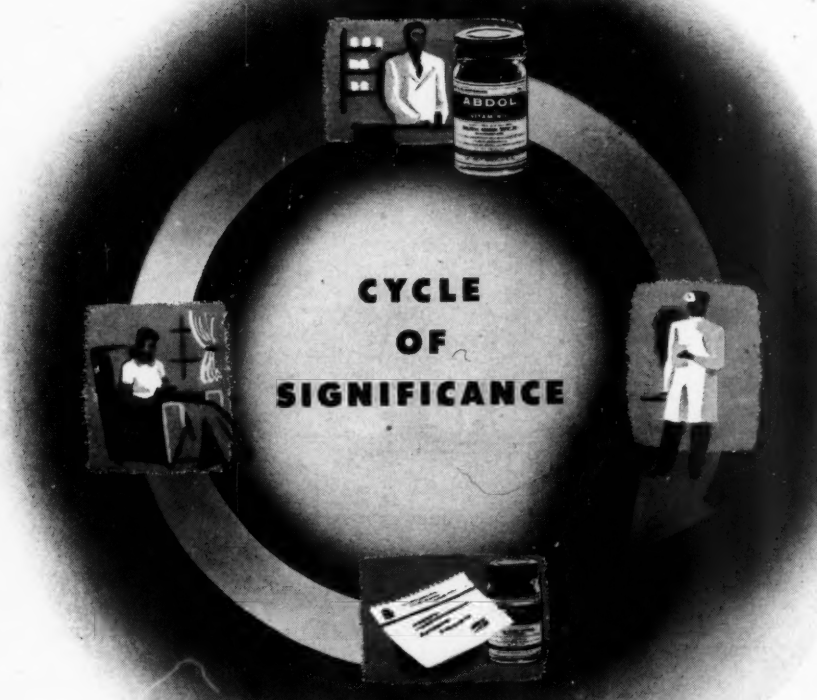

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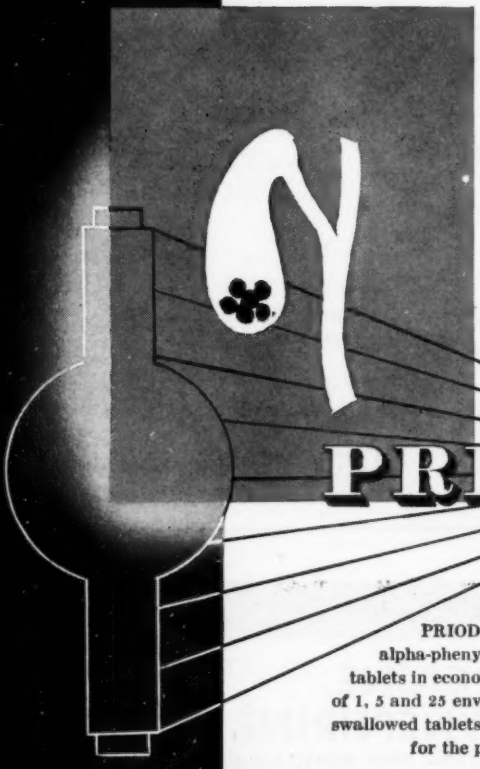

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E D I T O R I A L

THE AMERICAN PHARMACEUTICAL ASSOCIATION DIVISION OF HOSPITAL PHARMACY.

THE establishment of a Division of Hospital Pharmacy in the American Pharmaceutical Association should come as no surprise to those familiar with the trend of events in American Pharmaceutical Association affairs in the past few years.

The early struggles of a few pioneers in the field of hospital pharmacy to gain it recognition are well remembered. We recall clearly those first steps taken at the Dallas convention about a decade ago when a group of courageous souls, bolstered by some college teachers and friends, began what is now a major enterprise—so important that new terminology and a new table of organization is required to describe its position within the American Pharmaceutical Association, a "Division" no less.

One of the characteristics that we must concede in our Secretary of the American Pharmaceutical Association is his ability to see trends and to judge the relative importance of things and people, a no mean accomplishment. By this very token we need have little fear that these lines will come to his attention and so we run little risk of censure.

For some time it has been apparent that the American Pharmaceutical Association was somewhat concerned over the autonomy of the American Society of Hospital Pharmacists since this one time lusty offspring of Pharmacy was becoming mature and influential. To have such a group not embraced in the overall organization of pharmacy, the American Pharmaceutical Association, was disturbing to the latter's officers to say the least. The promise of growth on the part of hospital pharmacy to proportions now undreamed of by most people was an added incentive for the overtures made to hospital pharmacists in the immediate past and now crowned with success.

Hospital pharmacy may some day dwarf even retail pharmacy in the overall picture of public health, unpopular though this statement may be. That the public demands better medical care is well known. More and better hospitals is conceded to be one of the primary needs. With the increased recognition given to the hospital pharmacist, more such personnel will be required to staff the hospitals now planned and being built. For the American Pharmaceutical Association to ignore the growing importance of hospital pharmacy and do nothing about it would be utter folly.

Lest anyone misconstrue our rather pointed observations, most of all the American Pharmaceutical Association Secretary, let us say that he did what any intelligent person with his responsibilities would attempt. Whether others having the qualification of intelligence would have been equally successful is not so certain, for we are not at all sure that this courtship of the American Society of Hospital Pharmacists was a simple matter.

The fact remains that a coordinated effort in pharmacy is imperative and the accomplishments in this respect in the last few years are very commendable. Take, for example, the joint meetings of the National Association of Retail Druggists Executive Board and the Council of the American Pharmaceutical Association. How much better is such an arrangement than when each group functioned with little or no regard for the opinion of the other on problems of mutual concern. No, the hospital pharmacy movement must be a part of organized pharmacy and integrated with it.

The only danger inherent in the present affiliation of the American Society of Hospital Pharmacists and the American Pharmaceutical Association is that the energy with which the hospital pharmacists have distinguished themselves is not now repressed. They must not be allowed to make the mistake of assuming that the American Pharmaceutical Association will take all the necessary initiative. Neither should resentment at having been engulfed, so to speak, by the American Pharmaceutical Association lead to general disillusionment and despair. The contributions in time and energy of each hospital pharmacist are still needed and they must be supplied. No greater challenge than that of hospital pharmacy has been given to pharmacy in decades.

The American Pharmaceutical Association like a wise parent must give sufficient freedom of expression to this, its new ward.

Just as children must be encouraged and their energies directed, so must this be its policy. To think for this ward and then have it execute precisely what is ordained will lead, as in children, to an inferior end-product and one which is a disappointment and a disgrace to its parents.

Thus ends the analogy. Good luck to the Division of Hospital Pharmacy. It can do all of pharmacy great good.

L. F. Tice.

CARE OF THE AGED AND CHRONICALLY ILL*

By Theodore G. Klumpp, M. D.**

A CENTURY and a half ago, Horace Walpole wrote these lines: "About the time, or a little later, I die, the secret will be found of how to live forever". Feeling that enough time had passed to vouchsafe a reply, Helen Bevington answered:

"Horace, be comforted to die.
One century has meandered by
And half the next since, it was true,
The temporal state eluded you.
Now as I read your pensive letter,
I wish myself that times were better
And I might boast how men contrive,
As you foretold, to stay alive.
By now we should possess the key
To fleshly immortality
And, if we wanted to, endeavor
To live forever and forever.
This, to my infinite regret,
Is not a custom with us yet.

I write you Horace for good cheer
Life is about as usual here."

Unfortunately, life is about as usual here so far as our knowledge of the nature of the ageing process and many chronic diseases is concerned. In the past we have been largely preoccupied with the diseases of youth and childhood. Our chief endeavor was to learn to run the gauntlet of infections so that we might be able to raise a reasonable number of our children to adult life. We have not yet finished this job and we never will altogether—but mortality statistics show that we have made great advances for which our physicians, research workers, and public health officials can feel justly proud.

* Paper read at the Annual Meeting of the American Public Health Association, Cleveland, Ohio, November 14, 1946.
** President, Winthrop Chemical Co.

But as a result of our success in conquering infections and some of the most deadly diseases of childhood, we now have an adult population that is larger in proportion than it has ever been before. It promises to grow even greater as the years roll by. This poses new public health problems, and hitherto neglected diseases assume compelling importance. The care of the aged and chronically ill must not be left to the old man with the long white beard and the scythe.

In a sense we are now standing where the stream divides. For generations we have followed the branch of infectious diseases. It has dwindled in size, but we have not yet really started the exploration of that other stream that flows in the direction of the chronic diseases of adult life and geriatrics. A whole new field of knowledge is waiting to be studied and mastered. We haven't even begun to think seriously about the sociological and public health aspects of old age and the chronic diseases. Neither medicine, nor industry, nor the State, has any carefully thought out program of what to do about the vast population of older persons that is rising in our midst. Only Dr. Townsend has a $50.00 every Friday plan which most other doctors feel is not the answer.

Our research has not scratched the surface of such problems as heart disease and coronary thrombosis, nephritis, arthritis, and cancer. We know more about the planet Mars than we know about the pathogenesis of arteriosclerosis which is probably the least common denominator of most of the disabilities of the ageing process.

Some indication of the increasing importance of the problems to which I have alluded may be gained from figures on the percentage of our population in the older age groups. According to U. S. Census figures, and reliable estimates with respect to the future, the following represents the proportion of our population 45 years of age and over:

1860 — 13.1%
1880 — 16.%
1900 — 17.8%
1920 — 20.8%
1940 — 26.5%
1960 — 33.3%
1980 — 40.3%

When we consider those 65 years and over, the following percentage distribution is reflected:

1860	—	2.7%
1880	—	3.4%
1900	—	4.1%
1920	—	4.7%
1940	—	6.8%
1960	—	10.0%
1980	—	14.4%

The important facts to be derived from these data are that the weight of our population is shifting toward the older group and by 1980 two-fifths of our population will be over 45, and one-seventh over 65. At the same time the total number of our people is also increasing. It has been conservatively estimated that we will have not less than 150 million people by 1980. This means that by that time there will be not less than 60 million 45 years and over and over 21 million 65 and over. Think of it: 21 million persons 65 and over! These figures have special significance in the light of the all time employment record which has just been announced by the President as 58 million gainfully employed. Which means that in less than 34 years we shall have more individuals over 45 years of age than the total number employed at the present time. We must also anticipate the continued introduction of new labor saving devices perhaps on a scale never dreamed of before. The technologies recently developed, particularly in electronics, and the upswing of interest in science generally should provide for that. If we do nothing about it and maintain present day working standards and conditions we shall have a potential labor surplus of over 30 million workers by 1980.

And now let us for a moment turn to the chronically ill. According to the United States Public Health Service the number of persons in the United States suffering from certain chronic diseases in 1937 was as follows:

Arthritis and rheumatinm	9,700,000
Heart disease	3,700,000
Hay fever and asthma	3,450,000
Chronic bronchitis	1,700,000
Nephritis and kidney disease	1,550,000
Nervous and mental diseases	1,450,000

These are only a few of the chronic diseases. The list would be too long to mention them all. We have not taken into account such seriously disabling diseases as diabetes, thryoid diseases, blindness, tuberculosis, and other chronic infections. It has been estimated that in 1943 there were 25,000,000 suffering from chronic ailments with a disability rate of 1 billion man days, and approximately 1 million deaths a year from the same cause. Add to this 9,700,000 individuals partially or totally disabled from accidents and it may be seen that we have a problem on our hands that is greater than most people realize. As the number of older individuals in our population increases, this problem too will become accentuated.

What to do about the aged and the partially disabled? We can't plow them under as we used to plow under corn, potatoes, tobacco, and little pigs. And I am equally certain that we can't just turn them out to pasture and expect them to enjoy life. People are not happy when they are idle and this is particularly true of older individuals. Youth can loaf content with opiate dreams of future achievements. But as we grow older the realities of life are more clearly seen and less easily denied and as we approach 50 and 60 we can no longer derive solace from the pipe dreams of future achievements. Similarly the diversion of participation in sport and exercise are denied us. Age plays for real stakes not pastime. It wants something to do and it must be real. And the most real thing we have to sustain us in this life of ours is useful work for which we are paid in money or its kind. Have you seen, as I have, a faithful employee who has been working at his job for 20, 30, or 40 years and wants to continue? Have you seen such an employee "retired" to the boneyard by some blind compulsory retirement scheme? There is an unutterable sadness about it that sometimes makes me think that it would be kinder to shoot the old fellow. I believe I understand why so often they die shortly after retirement.

Any biological organism that has been accustomed to a set routine for 40 or 50 years can't suddenly be shaken from its orbit without untoward consequences. Anyone who has studied Cannon's ideas on homeostasis will recognize this.

Our society has been quite illogical and inconsistent in its attitude toward the older worker. On the one hand it is apparent that we have no objection to electing and appointing older individuals to positions of the greatest responsibility in government, business, and the professions.

For instance, in the present Congress 32 Senators or 41.3% are over 65 years of age, 12 or 15.3% are 61 to 65 years of age; in other words, more than 56% are over 60. In the House of Representatives, 57 or 21.3% are over 65 years of age, and 36 representatives or 13.4% are 61 to 65 years of age. A study was made of top business executives as listed in Poor's Directory. Taking 500 consecutive names contained therein it was found that 143 or 28.6% of those listed were over 65 years of age, 78 or 15.6% were between 61 and 65 years inclusively. Here again, over 44% are over 60 years of age. I am certain that a study of the leadership of the various professions would reveal the same large proportion of individuals in the older group.

And yet as far as the rank and file of workers is concerned we have no objection to the imposition of blind and unselective compulsory retirement rules which automatically eliminate those in the ranks who have reached the same age regardless of their fitness, ability, and contribution to the group for which they labor. More precious than oil or fertile soil, than ore and minerals, than trees or an equable climate, are the human resources of a country. All other things were here when Columbus discovered America, but it took intelligent industrious men to make our country what it is today. We may not fully realize it, but we cannot afford to waste the contributions of those who through years of experience have learned to do their jobs well and are willing and able to continue to do so faithfully. Training and experience can only be replaced by training and experience, and when we retire a competent older worker his successor has the burden, inevitably, of supporting him as well as himself. Some individuals welcome retirement and the possibility of voluntary retirement on a pension should always remain open for these. But, if the premise is that all individuals over 65 or 70 are not worth their keep then least of all should we permit individuals above those ages to occupy the top and critical positions in our social structure. If we acknowledge as is certainly true that some are, and some aren't, fit and pulling their weight at those ages, then we should use our intelligence to devise methods of determining which are and which aren't fit for all workers, not just the upper crust. As the great physiologist A. J. Carlson stated, "The physiologic age of the worker is not synonymous with his chronologic age, owing to the individual variables in heredity, mode of living, accidents and sequelae of disease". Likewise, "All age changes come on gradually" according to

Carlson, and we know now that in some individuals changes characteristic of senescence begin even in childhood. And biologically we all start to grow old the moment we stop growing. That such changes may proceed very gradually and slowly is illustrated by the fascinating and possibly authentic story of Christen Jacobsen Dragenberg reported in the *Journal of the Institute of Actuaries*. His manner of life may be instructive for those who seek longevity. Dragenberg was a Dane who lived to be 146 years of age from 1626 to 1772. He went to sea when he was 13, took part in the wars of three kings against Sweden, served many nations in merchant navies, when nearly 70 was taken prisoner by Algerian pirates, was sold as a slave, escaped slavery after fifteen years, and at 84 again went to war against Sweden. At 111 he married a woman of 60, outlived her, proposed at 130 to several women but was rejected. Mastering his disappointment, he lived on for sixteen years. Described as being of impetuous temperament, he lived a life far from blameless, but in his last five years, from 141 to 146, exhibited a conduct "quite respectable".

We choose and select when we hire, and I see no reason why we can't do the same thing when we retire our workers. In 1930 on the basis of a compulsory retirement rule, the most distinguished neurological surgeon the world has yet known, Harvey Cushing, was retired from the Harvard faculty at a time when he was at the peak of his ability. He promptly accepted a full time academic appointment at Yale where he continued his outstanding contributions to medical science. What was Harvard's loss was Yale's gain, but for Dr. Cushing the retirement rule meant only the waste of time and inconvenience of pulling up stakes, moving, and finding a new home. When Dr. Milton J. Rosenau was retired from the same faculty he too moved to another University where the rules were not so blind. From a sociological standpoint the whole thing is ridiculous and a reflection on the state of our intelligence in solving what ought to be a simple problem. Whenever society adopts a rule that eliminates the fit with the unfit, destroys the good with the bad, or punishes the innocent with the wicked, it is not a good rule. Society progresses by changing rules of this kind. In an imperfect society human beings are pushed around as a faceless mob. But social progress may be measured in the last analysis by the degree of skill and discrimination with which society solves the individual problems of its members.

The argument has been advanced that we must clear out the older workers to make room for the younger men so that their progress upward in an organization will not be unduly stymied. On the face of it this line of reasoning appears to have some merit. But it is only another way of stating that there are more workers than there are jobs. During the war when there was a manpower shortage, no one was afraid that the old, the lame, the blind, and the halt were taking jobs away from younger and more able workers. At other times similar arguments have been applied against the employment of women in business, government, and the professions. Certainly there is no arbitrary age at which older workers begin to repress the advancement of younger individuals. In a sense, every older individual higher on the ladder of advancement, whether he be 65 or 55 or 45, is holding a job that a younger individual aspires to and feels he can fill. That is always true and it will be just as true if we force everyone to retire at 50 or even 45 as we will have to do by 1980 if we don't find a more logical way of reducing the disparity between jobs and workers. We must not lose sight of the fact that someone must support those that we retire to idleness. The more workers we retire, and particularly if we should lower the retirement ages, the greater will be the economic burden we will place on those who work. They will have to produce enough to support themselves and their families as well as the increased numbers of those who become emeritus workers. The whole problem is the adjustment of the number of workers to the number of jobs available. To attempt to strike a balance by eliminating all workers over a certain age is an unfair penalty on age and experience. In a refined and delicate way it is a perpetuation of the jungle law of the fang and claw where the leaders of the pack survive only until the younger beasts grow fierce enough to eliminate them. In modern civilization we are less violent but the end result is approximately the same.

One of the most important steps in solving this problem is the successive reduction in working hours for all workers rather than by reducing more and more older workers to a state of parasitism. I venture to say that you and I will live to see a thirty hour week in industry.

Another view that is widely held is that older individuals become over-conservative, and to make progress we must eliminate these obstacles in the path of progress. Here again there are such wide

variations in human reaction patterns that I don't see how one can logically draw generalizations that will fit individual cases. Certainly Bernard Baruch, 76 years of age, is no obstacle in the path of progress, and neither Senator Pepper nor Henry Wallace have become more conservative as they have grown older. As far as the great mass of jobs now subject to compulsory retirement are concerned, it makes no difference at all whether an individual grows more or less conservative. If individuals in key positions become too conservative with age or even too reckless as they sometimes do, to meet the best interests of the organization, a retirement board operating on a selective basis can function to correct this development, as well as any others that may arise.

The War has given us a slight stimulus toward finding jobs for partially disabled workers. We have not yet developed this as far as the German ulcer battalions are concerned, and a great deal of educational work remains to be done with industry and Government. When a worker is physically handicapped in one respect, he tends to compensate for this handicap by development in other directions. This biological mechanism of compensation serves to make such workers perhaps even more valuable than normal workers in the tasks which they are fitted to perform. We have a vast educational job to perform here and it seems to me that those who are interested in industrial health and welfare should lead in this endeavor.

During the past decade industry and our Federal and State Governments have made great advances in provisions for the care of the aged. What we have accomplished is only a start and much more remains to be done. I am hopeful that the major burden of this can be carried by the extension of voluntary retirement plans in which the employer and the employee share the cost. Not only must more realistic retirement benefits be provided, but such plans must be more widely adopted by employers generally. The problem of transferring retirement benefits without loss when an employee moves from one job to another remains to be solved. Under present day practices a worker who changes from one job to another to advance himself, or for any other reason, is penalized by loss of the portion of his retirement accumulation which the employer contributes. For those not covered by adequate voluntary retirement programs, the present token social security benefits must be increased, and old age assistance on a lower scale provided for those who, for

one reason or another, have failed to earn their share of the retirement burden.

Through workers compensation and health accident and disability insurance we have also taken important steps in caring for those who are chronically ill and partially or totally disabled. Here again we have only made a start. There is room for improvement not only in the provisions made for the economic care of these unfortunates, but also in the medical and institutional care made available. We can understand why general hospitals wish to avoid having their beds filled with "chronics", but we will need an ever increasing number of institutions devoted solely to these cases.

While social advances in the direction I have indicated will cost money, there is no contribution we can make to human welfare and happiness that is of greater fundamental importance. Compared with the tax burden of war and armaments, which human ingenuity should be capable of eliminating, it is negligible. Even this tax burden can be lessened by permitting capable and willing older workers to continue working, and finding more places in industry and government for those partially disabled.

As we progress to a more perfect civilization, the goal of which is nothing more than a greater measure of happiness for all mankind, there is much that remains to be done for those who are aged and chronically ill. The following general principles will, in my opinion, serve as a guide toward this end:

1. Since physiological age is not synonymous with chronological age, compulsory retirement on a calendar age basis should be abandoned.

2. Since hiring is selective and based on fitness to do a given job, retirement should likewise be selective and based on unfitness. If we can do one there is no reason why we can't do the other.

3. Compulsory retirement should be based on the recommendation of a retirement board composed of medical and psychiatric members as well as administrative officials.

4. In accord with Carlson's idea, if wage in proportion to performance is recognized as a fundamental principle, the older worker should taper off in industry, just as the young apprentice gradually works himself up in skill, performance and re-

muneration. In other words opportunities for down grading in position and salary should be offered. If this becomes a general practice, the aura of foolish pride which now stands in the way of this would soon disappear. The older worker can choose retirement if he doesn't like the idea.

5. Industry, governmental and private institutions must make a greater and more intelligent effort to employ partially disabled persons.

6. When the aged and disabled have work to do they are less of a burden, financially, socially, and spiritually to the folks at home. Other things being equal, home environment is better than an institution for the aged and disabled; and the strong and fit must learn to exercise a greater measure of patience, tolerance and kindness toward them.

7. Institutions for the aged and disabled must be changed from asylums to modern institutions where every convenience and scientific development is available for their physical, mental and spiritual comfort. The importance of occupational therapy must not be forgotten. Useless work such as basket weaving is not the answer. Under ideal conditions each institutionalized person will have a job tailored to fit his ability and aptitude and for which he will be paid in proportion to his production.

This paper has only one purpose: To emphasize the growing importance of the problem of the aged and chronically ill. It is a plea for the devotion of more thought, more research, and more funds to improve the lot of the largest and most neglected group of unfortunates in our society. It is from those interested in public health and welfare that we may expect leadership in this endeavor.

Old age is not a disease but the disabilities arising from it are. As we overcome these we not only postpone old age but we defeat the suffering and sorrow of old age. Death has its final victory but it can come in peace, even as it came to my teacher and our late President, Dr. Milton J. Rosenau.

CHEMICAL MICROSCOPY OF ESSENTIAL OILS

IV. Cassia and Cinnamon Oils

By L. Wilson Greene

SINCE my last paper on essential oil microscopy was published in 1939 (1), there has been no opportunity until recently to correlate the results of many hundreds of experiments in this field which were made during a six-year period just preceding the war. Service in the Army interrupted the work and many months may pass before experimental investigations can be resumed.

It is my present purpose to report the observations made on each oil examined, if such results are judged to have any significance. The need for further work will be apparent in some instances because of the limited number of specimens available for study at that time. It is believed desirable to record these results now, if only to prevent others from duplicating work already done. Communications relative to caraway, dill, wintergreen, and other oils will follow at a later date.

Source and Composition

Many species of aromatic trees and shrubs that comprise the genus *Cinnamomum* of the *Lauraceae* family yield volatile oils on distillation. The United States Pharmacopoeia describes the oil as being steam-distilled from the leaves and twigs of *Cinnamomum Cassia,* rectified by distillation and containing not less than 80% of aldehydes by volume. Only the bark oil from *C. zeylanicum* is recognized by the British Pharmacopoeia, which prescribes a cinnamic aldehyde content of 50% to 65% by weight.

Chinese cinnamon oil is the cheaper and more abundant of the commercial oils and is often called oil of cassia. Ceylon cinnamon oil has a finer flavor.

Three kinds of cinnamon oils are quoted currently in the *Oil, Paint & Drug Reporter*: cassia (U. S. P.), cinnamon bark, and cinnamon leaf oils. The bark oil is about ten times more expensive than cassia oil, while the leaf oil costs less than half as much.

Cinnamic aldehyde is the main constituent of cassia and cinnamon bark oils. Other compounds found in these oils include cinnamyl acetate, phenylpropyl acetate, methyl *o*-coumaric aldehyde, salicylic aldehyde, coumarin, benzoic acid, salicylic acid, benzaldehyde, methyl salicylaldehyde, eugenol, and phellandrene (2). Cinnamon leaf oil contains a high percentage of eugenol.

Experimental

Specimens Used

No. E-44. Cassia Oil, U. S. P., redistilled. Magnus, Maybee and Reynard Co.

No. E-196. Cassia Oil, U. S. P., redistilled. Crude oil imported from China and redistilled by George Lueders & Co., Inc.

No. E-202. Cassia Oil, native, 90/95%. Dodge & Olcott.

No. E-203. Cassia Oil, U. S. P. IX, redistilled. Dodge & Olcott.

No. E-204. Cassia Oil, imitation, redistilled. Dodge & Olcott.

No. E-250. Cinnamon Oil, from bark, B. P., Sparks White & Co., Ltd., England.

No. E-263. Cinnamon Oil, from bark of *Cinnamomum zeylanicum*, origin Seychelles. Imperial Institute, London, England, 1938.

No. E-264. Cinnamon Oil, from leaf of *Cinnamomum zeylanicum*, origin Seychelles. Imperial Institute, London, England, 1935.

No. E-291. Cinnamon Oil, Ceylon, superior. Schimmel & Co.

No. E-319. Cinnamon Oil, B. P., Chas. Zimmermann & Co., England.

No. E-367. Cinnamon Oil, B. P., Chas. Zimmermann & Co., England (second sample).

No. E-368. Cassia Oil, Chas. Zimmermann & Co., England.

No. E-412. Cinnamon Bark Oil, 8 years old. Leviathan Brand, W. H. Hobbs & Co., England.

No. E-424. Cassia Oil, 80/85%, 8 years old. Leviathan Brand, W. H. Hobbs & Co., England.

No. E-436. Cinnamon Oil, from *Cinnamomum zeylanicum*. Royal Botanic Gardens, Kew, England.

No. E-442. Cassia Oil, Polak and Schwarz, Inc.

No. E-482. Cinnamon Leaf Oil. Supplied by D. W. Robinson (original source unknown).

No. E-492. Cinnamon Bark Oil, B. P. Stafford, Allen & Sons, Ltd., England.

No. E-503. Cinnamon Leaf Oil, from *Cinnamomum zeylanicum*. Grown and distilled in Amani, March 1936. Supplied by R. R. Worsley, East African Agricultural Research Station, Amani, Tanga, Tanganyika Territory, Africa.

No. E-541. Cinnamon Bark Oil, English. Stafford, Allen & Sons, Ltd., England.

Reactions With Alkalies

Cinnamic aldehyde reacts with strong alkalies to produce cinnamic acid. Because of their high aldehyde content, it was thought that cassia and cinnamon bark oils might yield crystalline reaction products with aqueous and alcoholic alkalies. Each of the specimens was treated with alkaline reagents by the methods already described (1).

With a saturated solution of sodium hydroxide in absolute ethyl alcohol, specimens of cassia oil formed a cloudy, yellow, amorphous precipitate but no crystalline structure was observed. The same reagent, when mixed with specimens of cinnamon bark oil, gave crystals

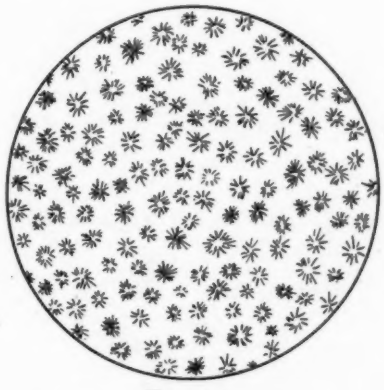

FIGURE 1
Cinnamon Bark Oil With Sodium Hydroxide in Ethyl Alcohol

FIGURE 2
Cinnamon Leaf Oil With Sodium Hydroxide in Ethyl Alcohol

as illustrated in Figure 1 after the preparation had stood at room temperature for about a half hour. Cinnamon leaf oil gave the crystals shown in Figure 2. Further work may demonstrate that sodium hydroxide in ethyl alcohol solution is a useful reagent to differentiate between cassia and cinnamon bark oils, and both oils from cinnamon leaf oil, but a conclusion to this effect is premature at this time.

While 30% aqueous sodium hydroxide is immiscible with cassia and cinnamon bark oils, when drops of each are mixed on the slide they generally solidify almost immediately to a white or faint yellow crystalline mass, which develops a definite structure in one or two

hours. The crystals exhibit strong interference colors in polarized light and their form is shown in Figures 3 and 4, respectively.

Sodium phenate (or phenoxide) is a useful reagent for characterizing these oils. It is prepared by dissolving sodium hydroxide in phenol in molecular proportions with sufficient water to make a 20% solution. If a 60% solution is employed, the preparation solidifies to a semi-solid mass without definite crystalline structure. Both cassia and cinnamon bark oils react with 20% sodium phenate solution to form a crystalline product within 10 minutes. Under the miscroscope, the preparation is filled with long, slender needles which radiate from points throughout the field and overlap. In polarized

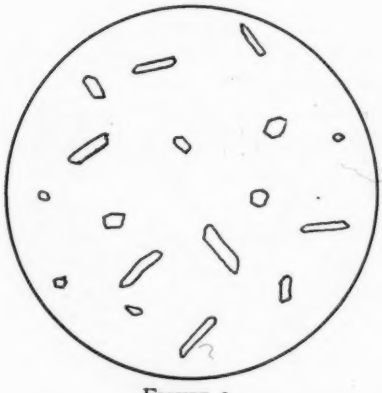

FIGURE 3
Cassia Oil With Aqueous Sodium Hydroxide

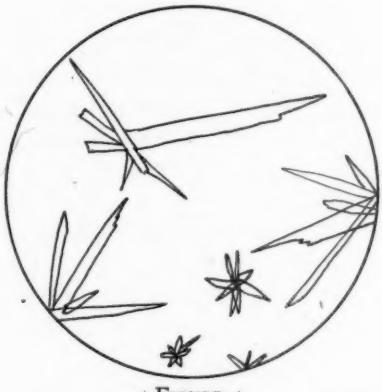

FIGURE 4
Cinnamon Bark Oil With Aqueous Sodium Hydroxide

light, these radiating clusters exhibit beautiful feathery markings in brilliant colors. Figure 5 shows the type of crystalline structure produced, while Figure 6 illustrates the crystals formed when an extremely small quantity of reagent is used. Both preparations exhibited the same strong interference colors in polarized light. Cinnamon leaf oil does not produce a crystalline reaction product within an hour and sodium phenate appears to be of considerable value in differentiating between the bark and leaf oils.

When a saturated solution of potassium hydroxide in absolute ethyl alcohol is employed as a reagent, both cassia and cinnamon bark oils produce crystals like those sketched in Figure 7. The crystals

are weakly anisotropic in polarized light and are practically invisible in ordinary light. This reagent causes cinnamon leaf oil to solidify to a solid, anisotropic mass without definite crystalline structure. The use of a more dilute reagent is indicated, but this has not been tried as yet.

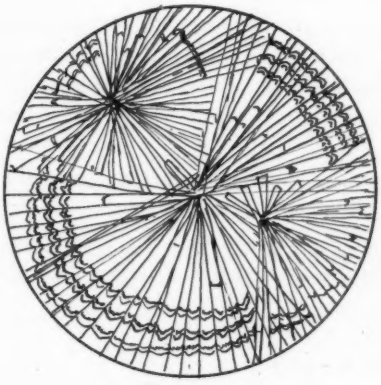

FIGURE 5
Cassia and Cinnamon Bark Oils
With Sodium Phenate

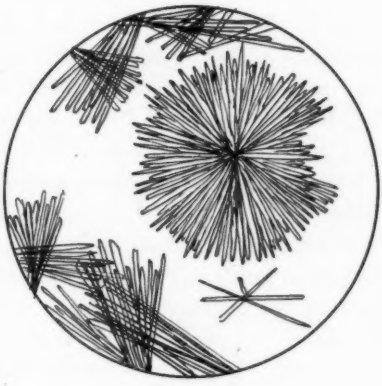

FIGURE 6
Cassia and Cinnamon Bark Oils
With Sodium Phenate

FIGURE 7
Cassia and Cinnamon Bark Oils
With Potassium Hydroxide
in Ethyl Alcohol

Reaction With Phenylhydrazine

A crystalline phenylhydrazone is formed when phenylhydrazine reacts with the cinnamic aldehyde present in cassia and cinnamon bark oils. When a drop of the reagent and a drop of either of these oils are mixed intimately on the slide, the preparation solidifies at once to a crystalline mass of interlacing needles. By allowing the reagent drop to flow slowly into the oil drop, clearly defined crystals are formed. These are illustrated in Figure 8. These are very similar in form to the crystals produced by reacting phenylhydrazine with bitter almond oil (1), but differ in their optical properties. The crystals from bitter almond oil exhibit strong polarization colors, while those from cassia and cinnamon bark oils show no colors in polarized light.

Cinnamon leaf oil gives a pale yellow color with phenylhydrazine but no crystals. Thus the reagent is useful in differentiating the cinnamon bark and leaf oils.

Reaction With Benzidine

If a drop of benzidine is mixed with a drop of either cassia or cinnamon bark oil, a yellow anisotropic mass of crystals forms immediately. This mass consists of hundreds of perfect and imperfect diamond-shaped plates. In order to obtain a reaction product suitable for examination under the microscope, a very small amount of

FIGURE 8
Cassia and Cinnamon Bark Oils With Phenylhydrazine

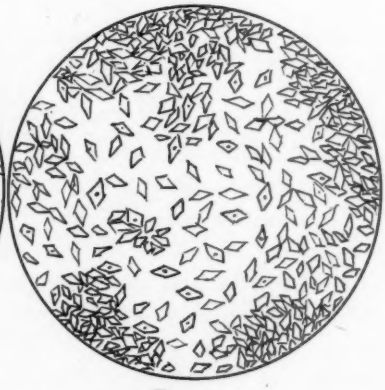

FIGURE 9
Cassia and Cinnamon Bark Oils With Benzidine

reagent is used; just enough to wet the tip of a stirring rod. The crystals are shown in Figure 9.

Other Reagents

Crystalline reaction products were obtained with a saturated solution of sodium hydroxide in *n*-butyl alcohol and with a saturated aqueous solution of sodium acid sulfite, using both cassia and cinnamon bark oils. The work with these two reagents was not carried far enough to warrant illustrating the results at this writing.

Acknowledgment

The following individuals and organizations very graciously contributed most of the specimens used in this work: D. W. Robinson, Hull, England; R. R. Worsley, East African Agricultural Research Station, Amani, Tanganyika Territory; Imperial Institute, London, England; Royal Botanic Gardens, Kew, England; and the following New York firms: Dodge & Olcott, George Lueders & Co., Polak & Schwarz, and Schimmel & Co.

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HOW TO UNDERMINE YOUR HEALTH

By T. Swann Harding

DURING the year of our Lord 1945, which ushered in the atomic age, a jury sat for 7 weeks in the trial of a seizure action based on a remarkable healing device. This device consisted of a box mounted on a stand, which contained a flood-lamp bulb, a fan, a water bottle to absorb heat, and two condenser lenses, and held on the front a rack holding, in turn, a frosted white, and five colored glass plates.

Each color was purported by the ingenious inventor to be efficacious in the treatment of pains in certain areas of the body. A chart was supplied the victim so he could pick out the pain and the color required to heal it. All human ailments were said to be susceptible of remedy by this treatment, including the most terrible to which human flesh is heir.

The concern making this device had a slogan: No Diagnosis! It has disposed of over 9,000 of its devices during the past two decades while the law was slowly creeping up on it. In recent years, however, it had been compelled to ship by express, for the Federal Government had denied it the use of the mails. The jury upheld seizure of the contraption by the Food and Drug Administration, Federal Security Agency.

Yet that sort of thing goes on constantly in our fair and enlightened nation. Such devices effect serious detriment to the public health which we have departments of public health to protect. But, one after another, they appear upon the market and find a field of exploitation among the credulous and those with the desire to believe the impossible.

We have considered only one of the many fraudulent drug preparations or therapeutic devices against which action was taken in 1945 under the Food, Drug, and Cosmetic Act of 1940. There was, for instance, a foot and body "Balancer", and an infra-red bulb. There was a second offense shipment against an injunction issued in 1942.

This concerned an electric belt recommended in accompanying literature for asthma, arthritis, Bright's disease, diabetes, varicose veins, and other serious diseases. Its aged promoter was fined $750 and placed in the cooler for penitential reflection for 10 days, all way

back in the summer of 1944; now he is under prosecution again. His penitence, if any, was impermanent.

During the past year, however, a truss company was socked for $250 (not a big enough fine by far) for shipping electric massagers labeled with claims for the treatment of serious prostatic and other disorders. An injunction was placed against an irrigating device, accompanied by five drug preparations, and dubbed a "system" for the self-treatment of sinus and catarrhal infections. As is customary, the "system" kept changing names and addresses and was difficult to chase down.

Moreover the "system" proved pretty durable when apprehended. After the individual and the corporation were both enjoined, the guiding genius continued to advertise the "system" for sale exclusively "to parties able to put it in national distribution." Here is one system that had a system. All told, action was taken the past fiscal year involving 62 seizures and 2 prosecutions based on misbranded devices, while an injunction was hurled at makers of some defective mechanical prophylactics.

Devices, however, form subject matter for only part of the story. Fortunately the fiscal year proved free from tragedies attributable to errors in drug manufacture. But many actions were taken which involved ampuls and injection solutions containing undissolved particles, or live molds; substandard official drug preparations; products said to contain high-priced hormones which they did not contain; contaminated crude drugs and unsanitary warehouses for drug storage; and nonsterile bandages and gauze dressings.

The shipper of an abortifacient paste was found guilty and given a year in jail as his reward, for the stuff was very dangerous. Action was taken against a number of drugleggers who bootleg drugs like the barbiturates which are legally obtainable only on prescription. Many big fines and criminal prosecutions were required.

False and misleading promises of therapeutic benefit to be derived from misbranded drugs required a great deal of attention. There was a natural, unrefined petroleum oil recommended as efficacious in the treatment of many skin disorders, and the usual tonics and products containing vitamins and minerals, falsely recommended to impart vim and vigor to users.

War-weary and nervously exhausted persons were found to be particularly susceptible to exploitation by makers of preparations who

promote them by adroit references to what they will do for disturbances of the digestive, circulatory, and nervous systems. Then there were the sure-fire weight reducers, guaranteed not to depend upon diet or laxatives.

Next in number of seizures were preparations for coughs, colds, asthma, and hay fever; laxatives and medicines for digestive disorders, arthritis, and rheumatism; articles to cure sexual disorders; mineral baths; preparations for nervous conditions; alcoholism cures; hair and scalp treatments; worm removers; and preparations to reduce high blood pressure. In general you may regard this as a list of remedies to avoid.

One diabetes remedy brought its maker 2 years in jail, another officer of the same corporation 30 days, and the corporation a $2,500 fine—small enough when you consider how monkeying with a diabetes cure can make a patient neglect competent medical treatment. The label claimed takers didn't need insulin; the formula was discovered during the Civil War and lost, but was recovered during the Ohio River flood of 1937, which "proved to be a blessing in disguise." The flood apparently exhumed a great-grandson who still had the formula.

One licenseless doctor, able to produce a variety of elixirs to relieve almost any human ill, proved incapable of concocting a medicine that would inoculate him against difficulties with the Food and Drug Administration. A woman who sold a long list of misbranded nostrums, among them flavored sodium bicarbonate as an influenza cure, paid a thousand dollar fine and spent 57 days in jail.

Not even the aged avoid conflict with the law. For there was a 76-year-old peddler of pep pills who had to be served a warrant for violation of probation by the continued sale of his misbranded products and to serve 30 days of his previously suspended sentence. Thirteen criminal prosecutions were instituted against shippers of vitamin preparations and 10 involved shippers of other products purported to contain vitamins but deficient therein. Some "enriched" flour and bread was also found which had missed part or all of its certified enrichment.

Some manufacturers added insult to injury by deceptively packaging their fraudulent drug preparations, thus mulcting consumers twice in the same place. Again a cold preparation was so packaged as to simulate a malaria remedy formerly produced by the same con-

cern! The misleading packaging was adopted to make purchasers think they were securing a more valuable drug.

A vitamin and mineral combination was packaged in a box containing only one layer and with an empty bottom section really designed to hold another layer. A lot on sale in the same vicinity, at a lower price, was almost identical in appearance, yet it contained twice as much.

Meanwhile, not only was the Food and Drug Administration laboring to protect us from our own folly in believing untruthful labels, but the Federal Trade Commission acted on false advertising. A typical example of FTC action concerned "Pep-o-Tabs", a preparation advertised to prevent men over 35 from feeling old, to restore ambition, and to produce pep, vitality, and manly vigor.

This preparation had earlier been designated as Brown and White Tablets, but the shy manufacturer refrained from disclosing that—if taken as directed—they could produce strychnine poisoning, irritation of the kidneys, and phosphorus poisoning. So now he has to give up the name "Pep-o-Tabs" also, and to cease untruthfully recommending his product.

But, as there are 19,360 publications capable of carrying false advertising, the FTC cannot do a thorough job, with radio on its hands besides. Yet it did examine 286,744 advertisements the past year, of which 16,551 were noted as carrying factual representations warranting investigation. Then the Commission examined 14,361 pages of mail order advertising, finding 709 dubious advertisements, and 562,260 commercial radio broadcast continuities, amounting to 1,329,534 typewritten pages! An average of 4,263 pages of radio script was read daily! Our question is: Who went crazy doing that?

When you stop to think of the time, skill, and effort Government experts expend trying to protect us from dosing or treating ourselves with medicines and devices liable to harm us—in some cases seemingly designed for our injury—you begin to wonder whether we are worth all that effort. If the human race is so inexorably bound to undermine its health with falsely recommended therapeutic preparations and devices, have we any right to stop it? Maybe an important biological law is operative here.

ANCIENT GREEK VERSUS MODERN MEDICINE.

By Leonard D. Frescoln, M. D., A. M.*

THIS paper will draw some comparison between Ancient Greek Medicine and modern medicine from which may be obtained possibly some help in modern scientific investigations. Greek Medicine first of all must be looked upon from the standpoint of their geography and atmosphere as pointed out by Jones, a country with no place very far from the coast and having a climate typical of the Mediterranean. Among the ancient Greeks as with the American Indians and other primitive peoples divination played a decided part in their medicine; some churches today have healing clinics. This was gradually overcome and replaced by philosophy, referring the etiology of disease to the air and other elements. Apparently cancer was recognized, this term coming down through the Latins. The Pythagoreans stressed disturbances in the bile, blood and phlegm as playing the main part in disease. Empedocles indulged largely in what we would term "quackery"—humors of the body. Homer was really the first to recognize the significance of proper treatment.

The Cnidus School starting from previous knowledge in the Mysteries had access to too few remedies; their classification of diseases was cumbersome and their prognosis was faulty. The general theory held by the old Greek schools was that the physician should be a keen observer and his part always was to help out nature—a matter too often overlooked in modern-day medicine with many times even interference with nature's way. Among the therapeutic measures employed were rest, fomentations, baths, venesection, exercises, use of laxatives and probably emetics. Today venesection *per se* is not so often used nor are emetics very often given, but it is interesting to note that the school of Hippocrates taught somewhat as in our modern physical medicine, that massage will loosen a stiff joint and even bind a loose one, the latter now doubtful.

As to the life of Hippocrates (as given by Suidas, Tzetzu, Soranus) he is supposed to have been born in 460 B. C. at Cos, a beautiful island in the Aegean Sea, a health resort because of its waters, later under the Turks. At Crete are ruins of sewers and

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a Temple of Medicine. Hippocrates was one of the Guild of Asclepiadae, physicians in line of descent from Asclepius. His father was Hiraclides; and his teacher Herodicus, his father also a physician taught him; he traveled about Greece and formed the friendship of Democritus. Perdiccas, King of Macedonia, sought his medical help, as did also Artaxerxes, King of Persia. It is not so uncommon in these days for a patient to come quite a distance for a specialist's help. Hippocrates is credited with having stayed the plague at Athens, although Thucydides said he was unsuccessful in this. He lived to be somewhere around 100 years old. The first attempt at founding a hospital was in these days of Greece.

He spoke of the most common diseases of the chest such as, tuberculosis, he also mentioned malaria; he stressed the importance of the so-called humors, blood and bile, black from the spleen. (Of course, we do not call them humors; we know more about body fluids.) He claimed foods and cold, natural causes, were important factors in producing disease and at times this is possible. He claimed epilepsy is no more sacred than any other diseases. He used the word πέψις (coction) as a resolution process, or crisis as we would say in pneumonia, i. e. lobar pneumonia, and coming on at different periods, although we would say on the fifth day in the lobar pneumonia. A certain syndrome of events was recognized as a plague—λοιμός; it might be in the form of a cold or a pneumonia—φθίσις, or ophthalmias, or malaria—πυρετός with cachexia. Melancholia was recognized (thought to be due to black bile), also ἐνρυσίπελας (although the causative streptococcus was not known), διάρροια, δυσεντερία, παρανοῶ, (paranoia), μανία and παράληος οδύνη meant a dull pain, ρίγος ague or chill and ρεῦμα a flux. (See ἐνρύσει, an issue of blood, Lk. 8:43.) The modern-day Cheyne-Stokes or irregular terminal breathing probably was described also.

In the treatise "Epidemics" we have reference to wounds, fractures, and air as important in treating disease. There is reference to purges, disease of women, excision of the foetus, fistulae, hemorrhoids, and prevention measures, the latter recently very properly stressed. References to the heart, pulse, glands, sight and dentition are also noted. The Hippocratic oath, or as it is now called facetiously the Hypocritical oath, is a splendid summary of the duties of the physician and still is largely subscribed to by the profession. It was probably the product of the Hippocratic School. Free instruction

was given to those who had taken the oath. They were to help the sick, give no poison, not commit abortion, keep life pure, not use the knife in cases of calculus (this of course broken now) and divulge no secrets. If anyone broke the oath he lost his profession. Physicians were cautioned against extortion. (Doctors take note!) Consultations were advised—*καταενεόνται*, as used extensively today. Luxuries were to be avoided. A certain head-gear was worn by the physician in order to give a sense of confidence to the patient; now it is used from the standpoint of asepsis. "Loud talking is painful" was a saying apropos to handling patients; modern hospitals exhibit the sign "Silence!" In his "Decorum" he wrote "Have in mind brevity of speech, bed-side manners." Very good. Plato's "Protagoras" refers under Socrates as spokesman to a study of Hippocrates in reference to the matter of fees, "Give service for nothing." Heraclides, Celsus and Menon, pupil of Aristotle, also refer to him. Aristotle himself referred to the "Great Hippocrates." Hippocrates recognized endemic diseases. Aristotle laid down a wise dictum when he said "Men do not become physicians by the mere study of books." Hence arose our clinics. He claimed doctors should have an office and a resort to consultation. He said, "Choose the simplest way." (We could profit by this today.) High morals were stressed as they always should be. He gave the advice of placing a flask of hot oil over the stomach at night to relieve flatulence—not bad advice; it was similar to our turpentine stupe.

Hippocrates claimed that medicine was not an exact science, nor indeed is it. He felt also that the sense of touch was not accurate and that there was need of what we call a thermometer for determination of fever. You will say in many things he was ahead of his time. As to particular medicines, he said too much hellebore given for the bowels caused death, as indeed it would. He is said to have performed remarkable cures in Thessaly, Abdera and Arges. He once said "Where the love of man is, there is also the love of healing." Galen was later particularly interested in the nature of man, and he copied the anatomy laid down by Hippocrates and also the ideas set forth concerning epilepsy and other maladies. To this day comparatively little more is known about essential epilepsy. Galen wrote on fractures and surgery in general, describing both the Coan and Cnidian Schools of Science and Art. Hippocrates was admired by both Plato and Aristotle, and acclaimed by Galen who is supposed to

have called him "Father of Medicine." It was not long before the Greeks came to excel in surgery. Diogenes and the Pythagoreans praised in general the physicians of their time. Hippocrates held that most of their drugs had their effect in the stomach, but some in the lungs. His experiment along this line was to cut a pig's throat while swallowing and inject a colored dye into the potion in order to determine where it went. (Apparently there were no Antivivisectionists in those days.) In the Middle Ages Hippocrates was glorified in the Category of Christian Saints together with Cosmos and Damian. He had positive views on the subject of medicine and handed down some of them in writings. In fact Socrates told Euthydemus that Hippocrates' medical writings were numerous. Herodotus, not a physician, was a good observer, he said diseases generally attack men when exposed to a change. We see this same thing.

The Greeks indeed did scientifically raise many great problems not yet answered. They went into the relation of mind to body e. g., and the relation of physician to patient (as witness the remarks of Socrates and Plato). They were really the first scientific physicians. They stressed getting all information possible in order to make a proper diagnosis. Their knowledge was transmitted from parents to offspring, so their system exhibited no very definite evolution. Prof. Heidel dates Hippocratic medicine from the 5th century B. C. but especially from the 4th century. At this time anatomy and physiology were just having their beginning. Aristotle claimed that the test of a physician was his knowledge of the body itself and in general the nature of the bodily functions; medical schools teach this. Hippocrates once said, "Science begets knowledge; opinion, ignorance." Effort was then made to put investigations on a scientific basis. He also said, "Clear knowledge of natural science must be acquired in the first instance through mastery of medicine alone." Of course investigations fell far short of correct conclusions; Heraclitus, who taught that air went through the arteries (and hence their name), stressed the importance of even fire and water in handling disease. He said matter is like a stream, continually changing its relativity—a term not unknown today. Aeschylus, born of Apollo at Epidaurus, was called by the peasantry "Dusty Foot." At this location are to be found the ruins of the first sanitorium.

Nutriment was originally supposed to reach bone and indeed all parts of the body through moisture. Plasters were applied in order

indirectly to reach deeper parts. At times, poisonous drugs, as the hemlock given Socrates, were deliberately given to kill. The ancients found that by sweating, recovery of a patient was hastened. Meat was recommended in a dietary only in the selected cases. Marrow was thought to be essential in the formation of callus. Unfortunately this does not seem to help in cases of ununited fractures. In ancient medicine we find dietetics became an involved problem, and often foods had to be restricted, as in the case of the lower animals. Of course it was observed too little food was just as bad as too much. Bread, boiled meat, wine were generally allowed. Hippocrates wrote on "Diet", listing 52 edible animals in order. It was advised to avoid hard water and thereby prevent constipation. Likewise water from melted ice was considered bad. It was observed that calculi were formed by taking too much milk (Ca) but they said not so likely in the female. The condition does seem less frequent, however, in the female sex. Phlegmatics, they said, develop dysentery. Scythian girls were advised to burn the right breast in order to strengthen the right arm. Possibly this was along the line of Spartan bravery as exhibited by the lad enduring the bite of a wolf he carried and the injunction given a boy entering warfare when the mother, handing him a shield, said, "With this, my son, or upon it." Jolting upon a horse was supposed to cause barrenness in men, presumably from injury to the testicles, although this would be rare. (It might lead to an abortion in the female.) Swelling about the ear was recognized as mumps, an infectious parotitis, as we say, and strange to say they noticed, as today, the complication of Orchitis following this disease. Teachers of Medicine emphasized the love of Medicine as an Art. The physician was considered a teacher on the same level as a parent, and it was enjoined that he should even share his money if there was need of it—imagine that today!

Plato in his "Republic" states that in loose living disease develops requiring the use of a physician as well as a lawyer. The physician, as it was said, learns from patients concerning suffering and hence is able better to give instruction. He is concerned with the body as a whole. It was by Plato conceded, as was mentioned above, that medicine is not an exact science and of course it is not. Aristotle wrote largely on Reproduction in Animals in general.

Socrates analyzed nature and gave to it its proper value, *καιρός*, as also to oratory. First investigations had to do with the study of

God, partly because of fear connected with unusual meteorological phenomena and the like. To show how meticulous were his efforts, he is said to have given to his pupils the problem of solving how far a flea could jump by measuring the distance with their feet.

Homer was held by some to have been a physician and surgeon, and Anaximander delved into the study of the origin of man, and among the other things the character of Hippocrates. In the great work, the Odyssey, the doctor is described as "the servant of the people." Indeed there was one work written called "ἴατροι healers." Anaximenes and Diogenes of Apolloma (who described the veins) held that although air was the cause of all diseases it appeared in different variations. Empedocles, as already stated, included fire, water and earth as etiologic factors. Seasons were also said to have their effect in the causation of disease, as likewise observed in this day. The very earliest anatomists were Diocles and his pupils. The ancients of course found difficulty in discovering the cause of diseases, as still in the case of some, and they soon found, as we have, that not all are curable. Littré says of physicians, moreover, "Most, like bad pilots, are good enough in fair weather."

You all know the naming of the tendo-Achillis, but the wonder of it is why mother Achilles did not submerge her hands in the Styx to prevent the exposure of the post-tibial artery of her son! Herophilus dissected human bodies. (Torcula Herophili is named for him. He gave us the name "Duodenum.")

Menton wrote a history of medicine. Alcmaeon was a physiologist of Croton, Southern Italy. He was the first to dissect animals and worked largely on the subject of Reproduction. Hippocrates too had a work on Anatomy. Empedocles worked on Respiration, and Anaxagoras on the Physiology of Nutrition; in the latter's work a goat was one of the animals dissected. Erasistratus differentiated between arteries and veins. He inaugurated respiration calorimetry. Humorous sayings have been noted along with the scientific work among the old Greeks; Xenarchos e. g. wrote "Happy is the Cicada since his wife has no voice," and that is a true observation. Thucydides, contemporary with Hippocrates, described the Plague at Athens explaining the symptoms, having been smitten himself; he claimed treatment was of no avail in relieving the symptoms. Littré gives the thought that the epidemic of "coughing spells" at Perinthus was probably diphtheria or a combination with something else. In

all cases of sickness the individual and his environment were both considered; the shape of parts affected; whether blisters present disappeared; the matter of wakefulness, evacuations, scratching, thirst, pain. Parts were palpated as well as ausculted (e. g. in pleurisy as done today), in order to reach a diagnosis. Wounds were probed as occasionally done today.

Praxagoras, after Hippocrates, recognized the pulse. The "Facies Hippocratica" of modern medicine is the appearance of one in a convulsive state as recognized by the early observers. The Cnidian School gave more attention to elimination. In their keenness the ancients ventured to give a prognosis, as we try to do. They said hoarseness with fever rarely relapses, and that kidney disease in the aged was incurable, apparently referring to a chronic form of the disease. They also knew that if an accumulation of pus is incised, there is likely to be recovery. They seemed to understand somewhat the condition of internal organs largely by inference. They compared healthy members with the diseased ones, as we should do also. They felt that epilepsy, a so-called divine disease, was a condition of softening of part of the brain, and we cannot give a much better pathology. Heat was the measure used for provoking conception. Growth was attributed to a circulation of fluids in existing vacuoles, a rather strange way of putting it. Cupping was commonly practiced,—probably not sufficiently often in these days. Various experiments were performed, but no claim was held to sure conclusions. The art of Medicine pointed out the fact that health was to be found in sunlight and gymnastics. Dietetics was considered a very important subject, and in this connection cheese was in general held in bad repute. A change of scene was one of the things recommended for patients, and this is sometimes advised in these days. Also the use of Smelling Salts was in vogue then as now.

Hippocrates recognized a number of conditions the same as today, such as catarrhal affections, forms of malaria and certain hereditary diseases. Various common psychic manifestations were noticed; chill, cough, hiccough, sneezing, etc. Nature was felt to be a big factor in cures, as we said, and should be so credited today. Use of emetics, diuretics, cathartics, phlebotomy—all were in good practice. Bleeding especially was practiced by such surgeons as Machaon and Podaliorus.

Among the illustrations that have come down to us is that of Achilles bandaging the wound of Patroclus, his bosom friend, as depicted on an ancient vase. Far back in those times diseases came to be classified as acute or chronic (we have also subacute forms). Diseases of the eye were recognized, as also those of the rectum such as hemorrhoids. The technique of accouchement was practiced after a fashion (but not Caesarean section). Monomania in virgins was treated with hellebore. Vomiting of blood was recorded. Mandrake, a sleep producer in Ancient Greece, was called circeinum after the sorceress Circe. A medicament held in favor in those early days consisted of pine seeds and honey. It was a priestly school that was interested with the handling of medicines at Rhodes; and there was a statue of Asklapios, representing the particular school, which fell from its hill in 469 B. C. and slid down to the seaport. There is an old legend also which states that Aegeus consulted the Delphinian oracle since he had no children and his wife was over 70 years of age. He came to Corinth, there took a girl, and then placed a hat and shoes under a big stone, so that if he got a boy the boy could remove the same and start out as their king.

After perusing a bit of Ancient Greek medicine, on the whole I think it will be seen that this primitive people made a sincere attempt to diagnose and treat disease, yes and even give some sort of prognosis. Many of their efforts have indeed been a start in paving the way for the development of present day practice. With this rather sketchy paper I have endeavored to trace some of the beginnings of medicine. Of course in many instances naturally the term "versus" in my title literally applies and yet it is astonishing to find in how many cases the Ancients seemed to be on the right road, and indeed they generally accepted the dictum "Mens sana in corpore sano."

SELECTED ABSTRACTS

The Treatment of Trypanosomiasis With *p*-Arsenosophenylbutyric Acid. I. Results in 319 Cases of Early *Trypanosoma gambiense Infections.* H. Eagle. *Pub. Health Rep. 61,* 1019 (1946). The data reported are based upon the collaborative efforts of the Sleeping Sickness Services of the Belgian Congo, French Equatorial Africa, French West Africa, the Gold Coast, Nigeria, and the Firestone Plantation in Liberia.

Free γ-(*p*-arsenosophenyl) butyric acid is a white compound which is insoluble in water. The sodium salt is highly soluble, forming a yellowish solution. The drug was first packaged in ampuls as a sterile 2 per cent solution, the pH of which was adjusted to 7.0. After about 12 months, however, the pH changed to 6.0, and approximately 7 per cent of the free acid precipitated. Thereafter the sodium salt was packaged in dry form in sterile vials containing 200 mg., from which a 2 per cent solution could be prepared readily.

The 319 human cases of early *T. gambiense* infection were treated with varying doses of the drug, the majority of the patients receiving 0.4 mg./Kg. per injection. Administration was by the intravenous route in all except 12 cases; in the latter, intramuscular injection (gluteal muscles) proved equally effective and produced only transitory local reaction. The total amount of *p*-arsenosophenylbutyric acid usually required was 6 to 7 mg./Kg.

The patients were thereafter observed for varying periods, the maximum being 18 months. Failure in therapy was noted in some cases, and the author predicts that additional failures will be noted among the group following continued observation. It is estimated, however, that more than 90 per cent of early cases can be cured by a total dosage of 6 to 7 mg./Kg.

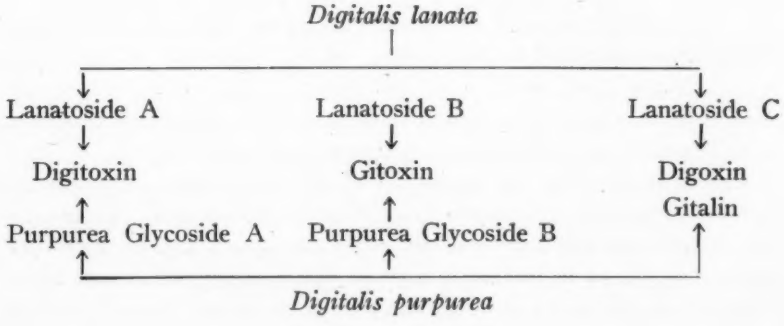
The 319 cases received a total of approximately 4,000 injections, with less than 1 per cent of immediate or delayed toxic reactions; this is in marked contrast to the immediate reaction often observed after the injection of such trivalent arsenicals as the arsphenamines or mapharsen. Through error in dosage seven patients received

2 mg./Kg. intravenously daily for periods of five to ten days, but no immediate nor delayed toxic reactions were noted.

Two patients died soon after a course of treatment. One of these was not seen by a physician, and thus the cause of death was unknown; arsenical poisoning was suspected in the other, but clinical and laboratory details were inconclusive.

The Digitalis Glycosides and Their Use. G. H. Wells. *Hahnemannian Monthly 82,* 30 (1947). The author discusses briefly the reasons for heart failure and the role of digitalis or its glycosides in correcting this condition. He considers as the outstanding advantages of the glycosides over digitalis leaf the following: (1) constant potency, (2) greater stability, (3) dosage based on weight, thus obviating bio-assay, (4) more rapid and complete absorption from the gastro-intestinal tract, (5) parenteral administration is possible, (6) less nausea and gastro-intestinal irritation, and (7) the possibility of securing single-dose digitalization in only a few hours.

The relationship of the glycosides derived from *Digitalis purpurea* and *D. lanata* is shown by the following chart:



The important commercially available preparations of these glycosides are stated to be Digitaline Nativelle (Varick), Digitoxin (Squibb), Purodigin (Wyeth), Crystodigin (Lilly), Digalen

(Roche), Digilanid (Sandoz), Cedilanid (Sandoz), and Digoxin (Burroughs-Wellcome).

Definite effects are stated to be obtainable in from fifteen to thirty minutes following the intravenous injection of lanatoside C (Cedilanid) or digoxin.

In tabular form are presented the digitalizing doses (intravenous) of digitoxin, digoxin, cedilanid and digilanid; the digitalizing doses (oral) of digitalis leaf, digifolin, cedilanid, digoxin and digitoxin; and the daily maintenance doses of digitoxin, digoxin, cedilanid and digilanid.

The duration of action of digitoxin is much more prolonged than that of lanatoside C or digoxin, e. g., two to three weeks from a single dose of the former and about three days for cedilanid and digoxin. It has been demonstrated that digitoxin combines with the proteins of the blood, which is not the case with lanatoside C. Accordingly, the toxicity from an overdose of digitoxin would be more prolonged, and thus close supervision of the patient must be maintained. The toxic dose of the digitalis glycosides is stated to be about 60 per cent greater than the therapeutic dose.

Lymphogranuloma Venereum: Report of a Case Treated With Penicillin and Sulfadiazine. M. J. Entin and R. D. Boles. *U. S. Naval Med. Bull. 47,* 157 (1947). The authors report the successful treatment of an early case of lymphogranuloma venereum with penicillin and sulfadiazine, without recourse to surgery.

It was felt that the synergism of the two drugs would effect a speedier recovery. Accordingly, a dose of 50,000 units of penicillin was administered intramuscularly every two hours, and an initial oral dose of 4 gm. of sulfadiazine with an equal weight of sodium bicarbonate was given, the sulfonamide thereafter being reduced to 1 gm. every four hours.

The patient showed prompt improvement, and on the fourth day of treatment the dosages were reduced to one-half. He was discharged on the fifth day, having received 2,075,000 units of penicillin and 24 gm. of sulfadiazine.

Expectorant Action of Volatile Oils. E. M. Boyd and G. L. Pearson. *Am. J. M. Sc. 211,* 602 (1946); through *U. S. Naval Med. Bull. 47,* 51 (1947). For many years the volatile oils have been used as expectorants; the history of their introduction into therapeutics is reviewed. The administration of the volatile oils of turpentine, pine, anise, lemon, and eucalyptus, and the related drugs terpin hydrate and terebene, to lightly anesthetized guinea pigs by means of a stomach tube increased the output of respiratory tract fluid (R. T. F.). Anise oil was found to be the most effective expectorant of the drugs tested; the optimum dose was 50 mg./Kg. body weight. Compound tincture of benzoin, administered in the same manner, did not have a significant effect upon the output of R. T. F.

Eucalyptus oil, selected as a representative of the group, also exerted an expectorant action in albino rats, rabbits, cats and dogs.

Section of the afferent gastric nerves did not influence the expectorant action of the volatile oils tested, leading to the conclusion that these drugs do not act reflexly from the stomach but probably directly upon the secretory cells of the respiratory tract.

Masking of Early Syphilis by Penicillin Therapy in Gonorrhea. S. Fromer, J. C. Cutler and S. Levitan. *J. Venereal Disease Inform.. 27,* 174 (1946). Of a group of about 1,000 patients with early syphilis, 66 were seen who had received penicillin therapy for gonorrhea within the incubation period of syphilis (seven days to four months). None of these 66 patents had developed a penile ulcer at the time of the first course of treatment, but 18 of them had a history of experiencing chills and/or fever during this therapy.

The authors emphasize that such reactions are significant, since they are very rare in uncomplicated gonorrhea. Penicillin therapy in early syphilis is accompanied in about 90 per cent of all cases by a Herxheimer reaction which is believed to result from the liberation of toxic substances following the destruction of the spirochetes. This reaction usually appears within three to eight hours after the first injection; among the symptoms which may be noted are chills, fever,

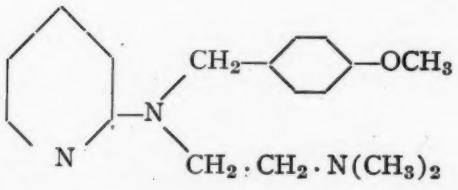
headache, nausea, edema of or pain in the primary ulcer and surrounding tissues, swelling of or pain in enlarged lymph nodes, etc.

The incubation period for gonorrhea may extend from seven to thirty days, or even longer. If a syphilitic infection is acquired either before or at the same time as the gonorrheal infection, the patient may not exhibit clinical evidence of syphilis at the time that a diagnosis of gonorrhea is given. In addition, since the dosage of penicillin usually employed in the treatment of gonorrhea is known to be inadequate for syphilis therapy, the incubation period of the latter disease may be lengthened.

The authors recommend that the occurrence of a febrile reaction in a patient receiving penicillin therapy for gonorrhea should be considered strong presumptive evidence of the coexistence of syphilis, and that careful clinical and serological examinations should be performed for a period of four months following such treatment.

The Antihistamine Substance 2786 R. P. P. B. Dews and J. D. P. Graham. *Brit. J. Pharmacol. 1, 278* (1946). The authors investigated the properties of the antihistamine substance 2786 R. P., confirming in general the earlier observations of Bovet and Walthert who termed this substance neoantergan.

Neoantergan is *N*-dimethylaminoethyl *N*-*p*-methoxybenzyl-α-aminopyridine:



It is a powerful inhibitor of histamine in animals and has been used successfully in clinical trials in the treatment of chronic urticaria and other conditions like hay fever. Accordingly to Schild, neoanter-

gan is 7 to 18 times more potent than benadryl in its antihistamine effect when tested on the guinea-pig ileum, but 60 to 70 times less powerful against acetylcholine.

As a local anesthetic neoantergan was three times as potent as procaine by the guinea-pig intracutaneous test. When tested on the isolated rabbit heart it had twice the potency of quinidine. It abolished the stimulant action of histamine on cardiac tissue, the dilator action on coronary vessels, and the constrictor action on the vessels of the rabbit ear. Neoantergan also displayed a feeble analgesic action when tested on rats by intravenous injection into the tail vein.

The subcutaneous injection of neoantergan in a total daily dose of 16 mg./Kg. for a period of eleven days did not affect the growth of young rats. This dose is equivalent to the maximum human therapeutic dose.

Allergic Reactions to Penicillin. A. I. Suchecki. *Brit. Med. J.* No. 4485, 938 (1946). Thirty-eight published reports of allergic reactions to penicillin are reviewed by the author, and nine additional cases observed by him are also reported. Case reports on six patients are presented.

Clinical evidence is accumulatng that the agent present in commercial penicillin preparations causing allergic reactions is the active principle of penicillin, a view strengthened by reports that crystalline penicillin has yielded positive skin tests in sensitized patients.

In the majority of cases of penicillin allergy the route of administration influences the clinical features and site of the reaction. The local use of penicillin is likely to result in contact or sensitization dermatitis; parenteral administration usually produces immediate or delayed reactions resembling anaphylaxis.

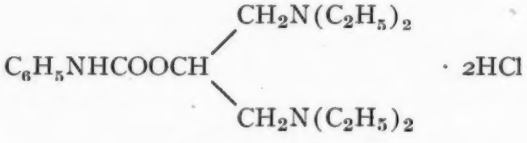
The author classifies penicillin reactions as (*a*) allergic hydrarthrosis, (*b*) urticaria, (*c*) a condition simulating serum sickness, and (*d*) anaphylactic-shock-like syndrome. A clinical description of each of these types is presented.

Reports on the frequency of reactions to parenteral penicillin vary from 0.56 to 5.7 per cent; the author considers the former to be

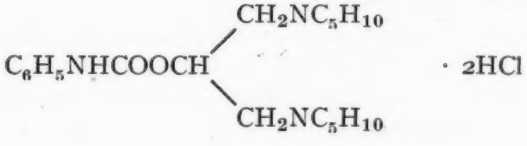
more reliable. Susceptibility to penicillin sensitization is greatly increased in the presence of skin infectons, partcularly those due to a fungus. Previous penicillin treatment, either parenteral or local, can predispose to allergic reactions.

Skin tests to determine sensitivity toward penicillin are stated to yield variable results. For controlling the manifestations of penicillin allergy the author recommends epinephrine hydrochloride hypodermically and ephedrine orally, with concurrent small doses of phenobarbital. It is suggested that "Benadryl" may be found useful, especially for the relief of urticaria.

The Synthesis, Toxicity and Anesthetic Potency of Two New Local Anesthetics. Y. T. Huang, M. C. Lu and I. Chang. *Brit. J. Pharmacol. 1, 273* (1946). Two new esters of phenylcarbamic acid were prepared and their toxicity and local anesthetic properties were studied. Sym. bis—(diethylamino) isopropyl phenylurethane dihydrochloride (designated as DP) was synthesized from sym. dichloroisopropyl alcohol and diethylamine, and sym. dipiperidinoisopropyl phenylurethane dihydrochloride (designated as PP) was prepared from the same alcohol and piperidine.



DP



PP

Toxicity studies were performed by administering PP and DP intraperitoneally to mice and intravenously to etherized cats. In mice the drugs possessed about the same toxicity as cocaine, and several times that of procaine. In cats PP and DP had an action on blood pressure and respiration somewhat similar to cocaine, but stronger than that of procaine.

The anesthetic potencies of PP and DP, as determined by the rabbit's cornea method, were found to be twice and one-half, respectively, that of cocaine. As determined by the intradermal weal method (forearm of human subjects), PP and DP were 12.5 and 5 times as potent as procaine, respectively.

The authors consider that the two drugs are worthy of clinical trial.

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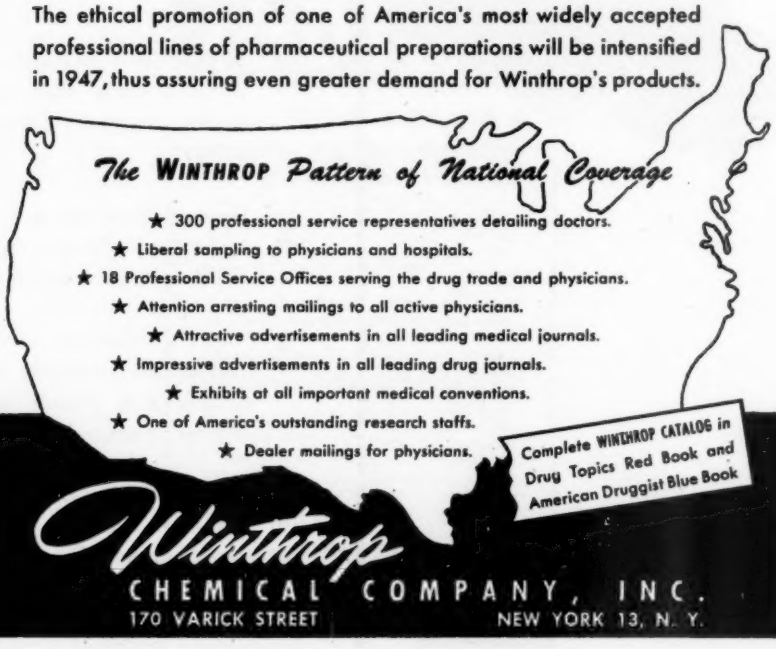
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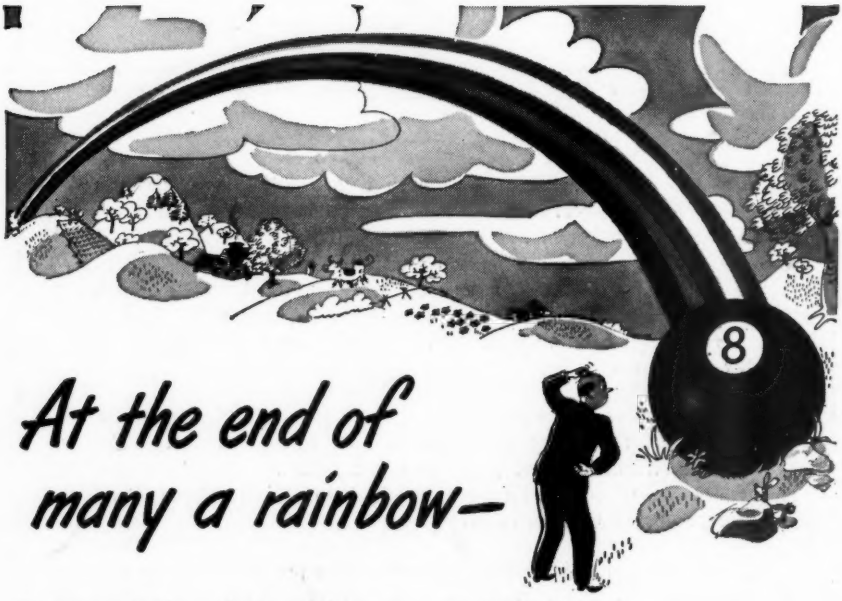

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